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Search History**Today's Date: 7/24/2001**

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USPT,PGPB,JPAB,EPAB,DWPI,TDBD	l35 and l66	2	<u>L71</u>
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USPT,PGPB,JPAB,EPAB,DWPI,TDBD	((707/104.1)!.CCLS.))	1120	<u>L66</u>
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USPT,PGPB,JPAB,EPAB,DWPI,TDBD	((701/200)!.CCLS.)	712	L53
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USPT,PGPB,JPAB,EPAB,DWPI,TDBD	((340/995)!.CCLS.)	1358	L51
USPT,PGPB,JPAB,EPAB,DWPI,TDBD	((340/990)!.CCLS.)	643	L50
USPT,PGPB,JPAB,EPAB,DWPI,TDBD	((340/\$)!.CCLS.)	93232	L49
USPT,PGPB,JPAB,EPAB,DWPI,TDBD	((707/\$)!.CCLS.)	11100	L48
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USPT	5168452.pn.	1	L46
USPT	5170353.pn.	1	L45
USPT	5285391.pn.	1	L44
USPT	5406493.pn.	1	L43
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USPT,PGPB,JPAB,EPAB,DWPI,TDBD	135 and kd-tree or peano	116	L37
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USPT,PGPB,JPAB,EPAB,DWPI,TDBD	133 and parcel	156	L34
USPT,PGPB,JPAB,EPAB,DWPI,TDBD	map and database	14205	L33
USPT	5101357.pn.	1	L32
USPT	5781195.pn.	1	L31
USPT	5867110.pn.	1	L30
USPT	5893901.pn.	1	L29
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USPT	5968109.pn.	1	L27
USPT	5978730.pn.	1	L26
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USPT	5170353.pn.	1	L23
USPT	5285391.pn.	1	L22
USPT	5406493.pn.	1	L21
USPT	5592665.pn.	1	L20
USPT	5953722.pn.	1	L19
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USPT	4571700.pn.	1	<u>L16</u>
USPT	4888698.pn.	1	<u>L15</u>
USPT	5305295.pn.	1	<u>L14</u>
USPT	5307278.pn.	1	<u>L13</u>
USPT	5375233.pn.	1	<u>L12</u>
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USPT	5515283.pn.	1	<u>L10</u>
USPT	5560006.pn.	1	<u>L9</u>
USPT	5678046.pn.	1	<u>L8</u>
USPT	5778374.pn.	1	<u>L7</u>
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USPT,PGPB,JPAB,EPAB,DWPI,TDBD	6058390.pn.	2	<u>L1</u>

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Search Results - Record(s) 1 through 1 of 1 returned.☐ 1. Document ID: US 5559707 A

L17: Entry 1 of 1

File: USPT

Sep 24, 1996

US-PAT-NO: 5559707

DOCUMENT-IDENTIFIER: US 5559707 A

TITLE: Computer aided routing system

DATE-ISSUED: September 24, 1996

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
DeLorme; David M.	Cumberland	ME	N/A	N/A
Gray; Keith A.	Dresden	ME	N/A	N/A

ASSIGNEE-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY	TYPE CODE
DeLorme Publishing Company	Freeport	ME	N/A	N/A	02

APPL-NO: 8/ 381214

DATE FILED: January 31, 1995

PARENT-CASE:

CROSS REFERENCE TO RELATED PATENT APPLICATION This patent application is a continuation-in-part (CIP) of the David M. DeLorme et al U.S. patent application Ser. No. 08/265,327 filed Jun. 24, 1994 for COMPUTER AIDED MAP LOCATION SYSTEM and the contents of this related patent application are incorporated herein by reference.

INT-CL: [6] G01C 21/00, G08G 1/123

US-CL-ISSUED: 364/443; 364/424.02, 364/444, 364/449, 340/990, 340/995

US-CL-CURRENT: 701/200; 340/990, 340/995, 701/23, 701/82

FIELD-OF-SEARCH: 364/443, 444, 448, 424.02, 364/449, 364/407, 342/357, 340/990, 340/995

PRIOR-ART-DISCLOSED:

U.S. PATENT DOCUMENTS

PAT-NO	ISSUE-DATE	PATENTEE-NAME	US-CL
<u>4926336</u>	May 1990	Yamada	364/444
<u>4939662</u>	July 1990	Nimura et al.	364/449
<u>5231584</u>	July 1993	Nimura et al.	364/444
<u>5270937</u>	December 1993	Link et al.	364/449
<u>5353034</u>	October 1994	Sato et al.	342/457
<u>5377113</u>	December 1994	Shibazaki et al.	364/449

OTHER PUBLICATIONS

Sciso, "Five Desktop Travel Guides Help You Plan Your Vacation", PC Magazine, Nov. 1993.
Software Product Specification, "Automap Road Atlas for Window (V. 3.0.)", Automap, Inc, 1993.
User Manual of Randy Mc.Nally Trip Maker for Window.

ART-UNIT: 234

PRIMARY-EXAMINER: Teska; Kevin J.

ASSISTANT-EXAMINER: Nguyen, Ian

ATTY-AGENT-FIRM: Kane, J. Daniel H. Caseiro; Chris A. Boha Thomas L.

ABSTRACT:

A computer aided routing system (CARS) determines a travel route between a user selected travel origin and travel destination following user selected waypoints along the way. A CARS database incorporates travel information selected from a range of multimedia sources about the transportation routes, waypoints, and geographically locatable points of interest (POIs) selected by the user along the travel route. The CARS software permits user selection of specified POI types within a user defined region of interest and user selection of particular POIs from the selected types within the region of interest. The transportation routes, waypoints, POIs and region of interest are identified in the computer by coordinate locations of a selected geographical coordinate system. The CARS software is constructed to present a user customized travelog for preview on the computer display of the user defined travel route. The travel planner can preview on the computer display a multimedia travelog particularly customized for the user defined travel route including multimedia information on the transportation routes, waypoints, and POIs selected by the user. The user can engage in an iterative trip planning process of revising the route and previewing travelogs of revised travel routes until a satisfactory travel route is determined.

59 Claims, 35 Drawing figures

Full	Title	Citation	Front	Review	Classification	Date	Reference	Claims	KWIC	Draw Desc	Image
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Terms	Documents
5559707.pn.	1

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Documents, starting with Document:

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Search Results - Record(s) 1 through 1 of 1 returned.☐ 1. Document ID: US 5966135 A

L28: Entry 1 of 1

File: USPT

Oct 12, 1999

US-PAT-NO: 5966135

DOCUMENT-IDENTIFIER: US 5966135 A

TITLE: Vector-based geographic data

DATE-ISSUED: October 12, 1999

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Roy; Gregory Andrew	Calgary	N/A	N/A	CAX
Bux; Osman Hamid	Calgary	N/A	N/A	CAX
Robinson; Kevin Glen	Calgary	N/A	N/A	CAX
Munro; Roderick Gaetan	Calgary	N/A	N/A	CAX

ASSIGNEE-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY	TYPE CODE
Autodesk, Inc.	San Rafael	CA	N/A	N/A	02

APPL-NO: 8/ 757706

DATE FILED: October 30, 1996

INT-CL: [6] G06F 15/00

US-CL-ISSUED: 345/433

US-CL-CURRENT: 345/619

FIELD-OF-SEARCH: 345/433, 345/439, 345/117, 345/118, 345/135, 345/340, 345/342

PRIOR-ART-DISCLOSED:

U.S. PATENT DOCUMENTS

PAT-NO	ISSUE-DATE	PATENTEE-NAME	US-CL
<u>5231584</u>	July 1993	Nimura et al.	364/444
<u>5559707</u>	September 1996	De Lorme et al.	364/443

OTHER PUBLICATIONS

ARGU95, ARGUS User's Guide 3.0, The Next Generation in GIS, Munro Garrett International, May 1994, pp. 176-180.
SOFT95, Specification for the Simple Vector Format (SVF) v1.1, article, SoftSource, Bellingham, Washington, 1995, pp. 1-8.
XERO95, Map Viewer Technical Details, Xerox Corporation, Jun. 2, 1995, 3 pages.
XERO95, Mapwriter (1) User Commands, Xerox Corporation Nov. 5, 1993, 4 pages.
XERO95, About the Xerox PARC Map Viewer, Xerox Corporation, Jun. 1993, 1 page.

ART-UNIT: 272

PRIMARY-EXAMINER: Nguyen; Phu K.

ATTY-AGENT-FIRM: Gates & Cooper

ABSTRACT:

The present invention discloses a method, apparatus, and article of manufacture for a computer implemented geographic information system that enables viewing a map picture that is generated from vector-based data. Map pictures can be generated with vector-based

7/24/01 7:11 AM

that is generated from vector-based data. Map pictures can be generated with vector-based data. Map pictures created with vector-based data can be viewed. Additionally, map pictures are comprised of map objects, such as states and cities. Map objects can be chosen to obtain additional information, for example, a different map picture. Additionally, areas of the map picture can be zoomed in on to view the areas with greater resolution or to obtain additional data about the areas. Furthermore, when a user requests to view a map picture, only the map data required to respond to the user's request is downloaded to generate a map picture. As a user makes additional requests for information, additional map data is downloaded and new map pictures generated.

19 Claims, 6 Drawing figures

Full	Title	Citation	Front	Review	Classification	Date	Reference	Claims	KWIC	Draw Desc	Image
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Terms	Documents
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Display

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Documents, starting with Document:

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Search Results - Record(s) 1 through 1 of 1 returned.☐ 1. Document ID: US 5101357 A

L32: Entry 1 of 1

File: USPT

Mar 31, 1992

US-PAT-NO: 5101357

DOCUMENT-IDENTIFIER: US 5101357 A

TITLE: Navigation data storage on compact disk

DATE-ISSUED: March 31, 1992

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Tempelhof; Alfred	Hildesheim	N/A	N/A	DEX

ASSIGNEE-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY	TYPE CODE
Robert Bosch GmbH	Stuttgart	N/A	N/A	DEX	03

APPL-NO: 7/ 468703

DATE FILED: January 23, 1990

FOREIGN-APPL-PRIORITY-DATA:

COUNTRY	APPL-NO	APPL-DATE
DE	3904344	February 14, 1989

INT-CL: [5] G06F 15/50

US-CL-ISSUED: 364/449; 364/424.05, 340/990, 340/995

US-CL-CURRENT: 701/200; 340/990, 340/995, 701/208

FIELD-OF-SEARCH: 364/449, 364/443, 364/444, 364/424.01, 364/424.05, 340/990, 340/995

PRIOR-ART-DISCLOSED:

U.S. PATENT DOCUMENTS

PAT-NO	ISSUE-DATE	PATENTEE-NAME	US-CL
<u>4502123</u>	February 1985	Minami et al.	364/449 X
<u>4613913</u>	September 1986	Phillips	360/51
<u>4646015</u>	February 1987	Phillips	324/253
<u>4686642</u>	August 1987	Buxton et al.	364/607
<u>4734863</u>	March 1988	Honey et al.	364/449
<u>4758959</u>	July 1988	Thoone et al.	364/449 X
<u>4788645</u>	November 1988	Zavoli et al.	364/449
<u>4796100</u>	January 1988	Sakaguchi	358/342
<u>4796191</u>	January 1989	Honey et al.	364/450
<u>4849827</u>	July 1989	Hashimoto et al.	364/449 X
<u>4876651</u>	October 1989	Dawson et al.	364/449
<u>4984168</u>	January 1991	Neukirchner et al.	364/449

ART-UNIT: 234

PRIMARY-EXAMINER: Black; Thomas G.

ASSISTANT-EXAMINER: Auchterlonie; Thomas S.

ATTY-AGENT-FIRM: Frishauf, Holtz, Goodman & Woodward

ABSTRACT:

A vehicular navigation and data retrieval system features, on-board, a navigation system (1) and a compact disk (CD) player (2) coupled to said navigation system and adapted to hold, and selectively retrieve data from, at least one audio CD (3) and at least one navigation data CD. A method of retrieving, from disk, navigation data for use by said navigation system (1), features the steps of determining whether said navigation system has an intermediate need for navigation data from said data CD (4), discriminating when said CD player (2) is playing an audio selection from said audio CD (3) and when said player is in a pause adjacent to an audio selection, and directing said CD player (2) to cease playing said audio CD (3) and start retrieving navigation data from said data CD only when said player is in a pause, unless said navigation system has said immediate need and, in the event of such need, interrupting said audio selection to permit navigation data retrieval. This method minimizes disturbing interruptions of the playing of music or other audio selections.

10 Claims, 3 Drawing figures

Full	Title	Citation	Front	Review	Classification	Date	Reference	Claims	KWIC	Draw Desc	Image
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Terms	Documents
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WEST**Generate Collection****Search Results - Record(s) 1 through 1 of 1 returned.**☐ 1. Document ID: US 5231584 A

L38: Entry 1 of 1

File: USPT

Jul 27, 1993

US-PAT-NO: 5231584

DOCUMENT-IDENTIFIER: US 5231584 A

TITLE: Navigation apparatus with non-volatile memory for return to initial departure point

DATE-ISSUED: July 27, 1993

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Nimura; Mitsuhiro	Anjo	N/A	N/A	JPX
Yokoyama; Shoji	Anjo	N/A	N/A	JPX
Sumiya; Koji	Anjo	N/A	N/A	JPX
Moroto; Shuzo	Anjo	N/A	N/A	JPX
Kato; Kiyohide	Anjo	N/A	N/A	JPX

ASSIGNEE-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY	TYPE CODE
Aisin AW Co., Ltd.	both of	N/A	N/A	JPX	03
Kabushiki Kaisha Shinsangyokaihatu	both of	N/A	N/A	JPX	03

APPL-NO: 7/ 759610

DATE FILED: September 16, 1991

PARENT-CASE:

This application is a continuation of application Ser. No. 07/415,297, filed Mar. 12, 1990, now abandoned.

FOREIGN-APPL-PRIORITY-DATA:

COUNTRY	APPL-NO	APPL-DATE
JP	62-333053	December 28, 1987
JP	62-333055	December 28, 1987
JP	63-199093	August 10, 1988

INT-CL: [5] G06F 15/50

US-CL-ISSUED: 364/444, 364/449, 340/990, 340/995

US-CL-CURRENT: 701/202, 340/990, 340/995, 701/209

FIELD-OF-SEARCH: 364/443, 364/444, 364/449, 364/424.03, 340/988, 340/990, 340/995, 73/178R

PRIOR-ART-DISCLOSED:

U.S. PATENT DOCUMENTS

PAT-NO	ISSUE-DATE	PATENTEE-NAME	US-CL
<u>4382178</u>	May 1983	Mori	364/444
<u>4642776</u>	February 1987	Matsumoto et al.	364/449
<u>4814989</u>	March 1989	Dobereiner et al.	364/444
<u>4888699</u>	December 1989	Knoll et al.	364/449
<u>4897792</u>	January 1990	Hosoi	364/449
<u>4937751</u>	June 1990	Nimura et al.	364/449
<u>4992947</u>	February 1991	Nimura et al.	364/444

ART-UNIT: 234

PRIMARY-EXAMINER: Lall; Parshotam S.

ASSISTANT-EXAMINER: Zanelli; Michael

ATTY-AGENT-FIRM: Lorusso & Loud

ABSTRACT:

A navigation apparatus has an input unit (1), a CPU (2), a display unit (3) and a memory unit (4), the memory unit (4) being a memory such as a CD-ROM in which network data of geographical points, namely destinations and present locations, and information are stored in advance. Also stored are map data (10), an intersection list (11), a destination list (12), road data (13) and a region name list (14), etc. When a destination is designated by an input from the input means (1), the CPU (2) performs an exchange with a program, stored in a ROM (9a), in order to set information for travel to the destination by course exploration in accordance with each geographical point stored in the memory unit (4). This information is stored in a memory such as a RAM (9b). In an embodiment, the RAM (9b) is provided with a non-volatile area for storing departure-point data (east longitude, north latitude, etc.). When an input is made by a reset switch in entering a departure point, the data in this non-volatile area can be rewritten. Data written in are preserved until the reset switch is pressed again and a geographical point is entered. Data will not be erased even if an ignition switch is turned off.

8 Claims, 50 Drawing figures

Full	Title	Citation	Front	Review	Classification	Date	Reference	Claims	KMMC	Draw Desc	Image
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Terms	Documents
5231584.pn.	1

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Documents, starting with Document:

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Search Results - Record(s) 1 through 1 of 1 returned.☐ 1. Document ID: US 5285391 A

L44: Entry 1 of 1

File: USPT

Feb 8, 1994

US-PAT-NO: 5285391

DOCUMENT-IDENTIFIER: US 5285391 A

TITLE: Multiple layer road memory storage device and route planning system

DATE-ISSUED: February 8, 1994

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Smith, Jr.; Bernard C.	Arlington Heights	IL	N/A	N/A
Link; Laura J.	Hanover Park	IL	N/A	N/A

ASSIGNEE-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY	TYPE CODE
Motorola, Inc.	Schaumburg	IL	N/A	N/A	02

APPL-NO: 7/ 740347

DATE FILED: August 5, 1991

INT-CL: [5] G06F 15/50

US-CL-ISSUED: 364/443; 340/995

US-CL-CURRENT: 701/200; 340/995

FIELD-OF-SEARCH: 364/443, 364/444, 364/449, 340/990, 340/995

PRIOR-ART-DISCLOSED:

U.S. PATENT DOCUMENTS

PAT-NO	ISSUE-DATE	PATENTEE-NAME	US-CL
<u>4570227</u>	February 1986	Tachi et al.	364/444
<u>4675676</u>	June 1987	Takanabe et al.	340/995
<u>4744033</u>	May 1988	Ogawa et al.	364/443
<u>4760531</u>	July 1988	Yasui et al.	364/443
<u>4761742</u>	August 1988	Hanabusa et al.	364/443
<u>4924402</u>	May 1990	Ando et al.	364/449
<u>4954959</u>	September 1990	Moroto et al.	364/449
<u>4984168</u>	January 1991	Neukrichner et al.	364/449
<u>4989151</u>	January 1991	Nuimura	364/449
<u>5084822</u>	January 1992	Hayami	364/449
<u>5168452</u>	December 1992	Yamada et al.	364/444

FOREIGN PATENT DOCUMENTS

FOREIGN-PAT-NO	PUBN-DATE	COUNTRY	US-CL
0346492A1	December 1989	EPX	
02-056591	February 1990	JPX	

OTHER PUBLICATIONS

AFIPS Conf. Proc. National Computer Conference, 9-12; Jul. 1991. pp. 697-796.
"A Guidance System for Automobiles of the Tokyo Metropolitan Road Network using
Multimedia", Masami Kato, Keisuke Ohnishi, Department of Electrical and Electronic
Engineering, Faculty of Science and Technology, Sophia University, pages 1 through 8.
(Presented at ISATA at Florence, Italy, May-Jun. 1991).
"Database Design, Development, and Access Considerations for Automotive Navigation",
David C. Marsh, Navigation Technologies Corporation,
CH2789-6/89/0000-0337.COPYRGT.1989IEEE, pp. 337-339.
"The Travelpilot: A Second-Generation Automotive Navigation System", James L. Buxton, et
al. IEEE Transactions on Vehicular Technology, vol. 40, No. 1, Feb. 1991
0018-9545/91/0200-0041, pp. 41-44.

ART-UNIT: 234

PRIMARY-EXAMINER: Black; Thomas G.

ASSISTANT-EXAMINER: Park; Collin W.

ATTY-AGENT-FIRM: Melamed; Phillip H. Moore; John H.

ABSTRACT:

A route planning system (10) uses a computer (11) and stored road data to calculate a desired route to a destination. Road data is stored in a multiple layer road map data memory (13) in hierarchical multiple layers (17, 18, 19), each layer defining roadways by stored road segments (1S1-3S7) which extend between nodes (135-365) that correspond to roadway intersections. A first or lower layer (17) of road data designates a large number of first layer vehicle roadways while a second or higher level layer (18 or 19) of road data designates only some of the large number of first layer roadways as second layer roadways. Preferably, stored second layer road segments (2S1-2S17 or 3S1-3S7) extend between intersections of the roadways designated in the second layer rather than between intersections of roadways in the second layer with roadways or road segments not designated in the second layer but designated in the first layer. Preferably, at least some of the second layer road segments (2S1-2S17 or 3S1-3S7) are equivalent to the combination of several road segments (1S1-1S52) stored in the first layer. The road map data memory (13) and route planning system (10) minimize storage requirements for road data while speeding up the route planning process.

16 Claims, 9 Drawing figures

Full	Title	Citation	Front	Review	Classification	Date	Reference	Claims	KWIC	Draw. Desc	Image
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Terms	Documents
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Display

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Documents, starting with Document:

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L37: Entry 68 of 116

File: USPT

Dec 19, 1989

US-PAT-NO: 4888698

DOCUMENT-IDENTIFIER: US 4888698 A

TITLE: Method for storing a parcelwise divided digital data base as well as of addressing a data parcel in a mass memory, and apparatus for carrying out the method

DATE-ISSUED: December 19, 1989

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Driessen; Leonardus M. H. E.	Eindhoven	N/A	N/A	NLX
Janse; Cornelis P.	Eindhoven	N/A	N/A	NLX
Lahaije; Paul D. M. E.	Eindhoven	N/A	N/A	NLX

ASSIGNEE-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY	TYPE CODE
U.S. Philips Corporation	New York	NY	N/A	N/A	02

APPL-NO: 7/ 110303

DATE FILED: October 19, 1987

FOREIGN-APPL-PRIORITY-DATA:

COUNTRY	APPL-NO	APPL-DATE
NL	8602654	October 23, 1986

INT-CL: [4] G06F 15/50

US-CL-ISSUED: 364/443; 364/200, 364/300, 340/995, 365/238

US-CL-CURRENT: 701/200; 340/995, 365/238, 707/104.1, 707/205

FIELD-OF-SEARCH: 364/443, 364/449, 364/200, 364/900, 364/518, 364/521, 340/995, 340/996, 73/178R

PRIOR-ART-DISCLOSED:

U.S. PATENT DOCUMENTS

☐ **Search Selected**☐ **Search ALL**

PAT-NO	ISSUE-DATE	PATENTEE-NAME	US-CL
<input type="checkbox"/> <u>3597745</u>	August 1971	Lahrson et al.	340/172.5
<input type="checkbox"/> <u>4550317</u>	October 1985	Moriyama et al.	364/449
<input type="checkbox"/> <u>4685068</u>	August 1987	Greco, II et al.	364/518
<input type="checkbox"/> <u>4692880</u>	September 1987	Merz et al.	364/521
<input type="checkbox"/> <u>4706198</u>	November 1987	Thurman	364/439
<input type="checkbox"/> <u>4737927</u>	April 1988	Hanabusa et al.	364/443
<input type="checkbox"/> <u>4773026</u>	September 1988	Takahara et al.	364/518

FOREIGN PATENT DOCUMENTS

FOREIGN-PAT-NO
86/02764

PUBN-DATE
May 1986

COU
WOX

US-CL

OTHER PUBLICATIONS

T. Matsuyama et al., "A File Organization for Geographic Information Systems Based on Spatial Proximity", Computer Vision, Graphics & Image Processing, 6/26/84, No. 3, pp. 303-318.

Lauzon et al., "Two-Dimensional Run-Encoding for Quad Tree", Computer Vision, Graphics, and Image Processing, vol. 30, No. 1, Apr. 1985, pp. 56-59.

ART-UNIT: 234

PRIMARY-EXAMINER: Lall; Parshotam S.

ASSISTANT-EXAMINER: Trans; V. N.

ATTY-AGENT-FIRM: Briody; Thomas A. Haken; Jack E. Barschall; Anne E.

ABSTRACT:

A database is stored in a mass memory. For this purpose, it is first divided into main cells and then into base cells according to a predetermined regular division pattern. Each base cell is then checked to see whether its data content is sufficient to occupy substantially completely a storage parcel having a predetermined capacity. If this is the case, the base cell is thus accommodated in a storage parcel; if this is not the case, adjacent base cells are grouped until a storage parcel is occupied substantially completely. The operation of addressing a storage parcel is effected by the use of a main cell table in which address pointers are stored, each of which points to a base cell table. In the base cell table, an index is given for each base cell and this index indicates in which storage parcel the relevant base cell is accommodated. Each of these indices indicates a location in a data parcel list at which an address indicator is present, which indicates the location at which the relevant parcel is stored in the mass memory.

18 Claims, 9 Drawing figures

WEST**End of Result Set**☐ **Generate Collection**

L70: Entry 2 of 2

File: USPT

Jul 28, 1998

US-PAT-NO: 5787233

DOCUMENT-IDENTIFIER: US 5787233 A

TITLE: Route generating device

DATE-ISSUED: July 28, 1998

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Akimoto; Shinji	Kamakura	N/A	N/A	JPX

ASSIGNEE-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY	TYPE CODE
Mitsubishi Denki Kabushiki Kaisha	Tokyo	N/A	N/A	JPX	03

APPL-NO: 8/ 624740

DATE FILED: March 26, 1996

FOREIGN-APPL-PRIORITY-DATA:

COUNTRY	APPL-NO	APPL-DATE
JP	7-069660	March 28, 1995

INT-CL: [6] G06F 13/376, G06F 15/18

US-CL-ISSUED: 395/10; 364/449.3, 395/81

US-CL-CURRENT: 706/45; 700/246, 701/209, 706/902

FIELD-OF-SEARCH: 364/449.3, 395/10, 395/81

PRIOR-ART-DISCLOSED:

U.S. PATENT DOCUMENTS

☐ **Search Selected**☐ **Search ALL**

	PAT-NO	ISSUE-DATE	PATENTEE-NAME	US-CL
<input type="checkbox"/>	<u>4862373</u>	August 1989	Meng	364/444
<input type="checkbox"/>	<u>4940925</u>	July 1990	Wand et al.	318/587
<input type="checkbox"/>	<u>5335181</u>	August 1994	McGuffin	364/443
<input type="checkbox"/>	<u>5502638</u>	March 1996	Takenaka	364/424.02
<input type="checkbox"/>	<u>5504841</u>	April 1996	Tani	395/81

FOREIGN PATENT DOCUMENTS

FOREIGN-PAT-NO	PUBN-DATE	COUNTRY	US-CL
63-200207	August 1988	JPX	
4-278981	October 1992	JPX	

OTHER PUBLICATIONS

T. Simeon and B. Dacre-Wright, "A Practical Motion Planner for All-terrain Mobile

Robots", Proc. IEEE Int'l. Conf. on Intell. Robots and Syst., 1357-1363., Jul. 1993.
L. Fagegalter et al., "Aid to Multi-path Planning of All-Terrain Land Vehicles,"
Int'l. Conf. Syst., Man, and Cybernetics, vol. 2, pp. 300-305, Oct. 1993.
"3-D Autonomous Navigation in a Natural Environment" F. Fawzi, et al., IEEE Int'l Conf.
Robotics and Automation, vol. 1, pp. 433-439, May 1994.
M. Cherif, et al., "Planning the Motions of an All-Terrain Vehicle by Using Geometric and
Physical Model," IEEE Int'l Conf. Robotics and Automation, 2050-2056, May 1994.
M. Cherif, et al., "Dealing with Vehicle/Terrain Interactions when Planning the Motions
of a Rover", Int'l. Conf. Intell. Robots and Systems, vol. 1, 579-586, Sep. 1994.
E. Krotkov and R. Hoffman "Terrain Mapping for a Walking Planetary Rover," IEEE Trans. on
Robotics and Automation, vol. 10 (6), pp. 728-739, Dec. 1994.
M. Suzuki, et al., "Geographical Route Planning Based on Uncertain Knowledge" Int'l.
Conf. Tools w/ Artificial Intelligence, 434-441, Nov. 1995.

ART-UNIT: 272

PRIMARY-EXAMINER: Downs; Robert W.

ATTY-AGENT-FIRM: Wolf, Greenfield & Sacks, P.C.

ABSTRACT:

A route generating device has an elevation map memory storing elevation data for subareas defined by division of an operations zone. A gradient map creating section calculates gradient data based on the elevation data and creates a gradient map from the gradient data. An obstruction region extracting section extracts an inclination obstruction region based on the gradient map. A traveling route generating section obtains a travelable region based on the inclination obstruction region. All possible traveling routes is calculated based on the travelable region. A route evaluating section evaluates the traveling routes and selects an optimum route from the current position to the destination. The gradient map is created based on the elevation data, it is possible to generate an optimum route without three dimensional obstruct such as a fall, a tumble and any other inability in movement of the movable object.

8 Claims, 35 Drawing figures

WEST

Generate Collection

Search Results - Record(s) 1 through 1 of 1 returned.☐ 1. Document ID: US 5515283 A

L10: Entry 1 of 1

File: USPT

May 7, 1996

US-PAT-NO: 5515283

DOCUMENT-IDENTIFIER: US 5515283 A

TITLE: Method for identifying highway access ramps for route calculation in a vehicle navigation system

DATE-ISSUED: May 7, 1996

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Desai; Simon	Sunnyvale	CA	N/A	N/A
Tamai; Haruhisa	Sunnyvale	CA	N/A	N/A

ASSIGNEE-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY	TYPE CODE
Zexel Corporation	N/A	N/A	N/A	JPX	03

APPL-NO: 8/ 263604

DATE FILED: June 20, 1994

INT-CL: [6] G06F 165/00

US-CL-ISSUED: 364/443; 364/449, 340/990, 340/995

US-CL-CURRENT: 701/200; 340/990, 340/995, 701/207, 701/225

FIELD-OF-SEARCH: 364/443, 364/444, 364/449, 73/178R, 340/988, 340/990, 340/995

PRIOR-ART-DISCLOSED:

U.S. PATENT DOCUMENTS

PAT-NO	ISSUE-DATE	PATENTEE-NAME	US-CL
<u>3845289</u>	October 1974	French	364/444
<u>4570227</u>	February 1986	Tachi et al.	364/444
<u>4608656</u>	August 1986	Tanaka et al.	364/443
<u>4611293</u>	September 1986	Hatch et al.	364/559
<u>4672565</u>	June 1987	Kuno et al.	364/457
<u>4673878</u>	June 1987	Tsushima et al.	364/444
<u>4723218</u>	February 1988	Hasebe et al.	340/990
<u>4734863</u>	March 1988	Honey et al.	364/449
<u>4751512</u>	June 1988	Longaker	342/357
<u>4782447</u>	November 1988	Ueno et al.	364/449
<u>4796191</u>	January 1989	Honey et al.	364/449
<u>4797841</u>	January 1989	Hatch	364/559
<u>4831563</u>	May 1989	Ando et al.	364/457
<u>4862398</u>	August 1989	Shimizu et al.	364/457
<u>4914605</u>	April 1990	Loughmiller, Jr. et al.	364/443
<u>4918609</u>	April 1990	Yamawaki	364/449
<u>4926336</u>	May 1990	Yamada	364/449
<u>4937753</u>	June 1990	Yamada	364/449
<u>4964052</u>	October 1990	Ohé	364/449
<u>4970652</u>	November 1990	Nagashima	364/449
<u>4982332</u>	January 1991	Saito et al.	364/449
<u>4984168</u>	January 1991	Neukrichner et al.	364/449
<u>4989151</u>	January 1991	Nuimura	364/449
<u>4992947</u>	February 1991	Nuimura et al.	364/449
<u>4996645</u>	February 1991	Schneyderberg Van der Zon	364/449
<u>4999783</u>	March 1991	Tenmoku et al.	364/449
<u>5040122</u>	August 1991	Neukirchner t al.	364/449
<u>5046011</u>	September 1991	Kakihara et al.	364/449
<u>5060162</u>	October 1991	Ueyama et al.	364/449
<u>5177685</u>	January 1993	Davis et al.	364/443
<u>5283743</u>	February 1994	Odagawa	369/449
<u>5287297</u>	February 1994	Ihara et al.	364/449
<u>5297050</u>	March 1994	Ichimura et al.	364/449

OTHER PUBLICATIONS

R. L. French, "Map Matching Origins Approaches and Applications," Rober L. French & Associates, 3815 Lisbon St., Suite 201, Fort Worth, Texas 76107, USA, pp. 91-116.

ART-UNIT: 234

PRIMARY-EXAMINER: Chin; Gary

ATTY-AGENT-FIRM: Townsend and Townsend and Crew

ABSTRACT:

A method for identifying highway access ramps in a database medium for use as locations for route calculation. Initially, first road segments which belong to a highway and which are connected to at least one access ramp are identified. The first road segments are sorted according to the highway to which they belong. A highway direction is determined for each first road segment. The first road segments belonging to a first highway are sorted according to highway direction. The first road segments belonging to the first highway and of each highway direction are sorted according to position, thereby forming a highway segment list for each direction of the first highway. Highway access ramps are identified for each first road segment in the highway segment list. The locations for the highway access ramps are stored in the database medium. Highway access ramps are identified in this manner for each highway in the database medium. A method and apparatus for determining a route from a starting vehicle position to a destination using a vehicle navigation system are also provided.

12 Claims, 14 Drawing figures

Full	Title	CIT.1	PSY.1	CLS.1	REF.1	RAW.1
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Search Results - Record(s) 1 through 1 of 1 returned.☐ 1. Document ID: US 5471393 A

L11: Entry 1 of 1

File: USPT

Nov 28, 1995

US-PAT-NO: 5471393

DOCUMENT-IDENTIFIER: US 5471393 A

TITLE: Driver's associate: a system for vehicle navigation and driving assistance

DATE-ISSUED: November 28, 1995

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Bolger; Joe	Austin	TX	78757	N/A

APPL-NO: 8/ 187743

DATE FILED: January 26, 1994

INT-CL: [6] G06F 17/00

US-CL-ISSUED: 364/450; 364/443, 364/449, 73/178R

US-CL-CURRENT: 701/217; 701/200, 701/208, 73/178R

FIELD-OF-SEARCH: 364/443, 364/449, 364/450, 364/582, 73/178R, 340/988, 340/990, 340/995

PRIOR-ART-DISCLOSED:

U.S. PATENT DOCUMENTS

PAT-NO	ISSUE-DATE	PATENTEE-NAME	US-CL
<u>4520445</u>	May 1985	Kearns	364/450
<u>5272639</u>	December 1993	McGuffin	364/449
<u>5307278</u>	April 1994	Hermans et al.	364/450
<u>5317514</u>	May 1994	Bancroft et al.	364/449

ART-UNIT: 234

PRIMARY-EXAMINER: Teska; Kevin J.

ASSISTANT-EXAMINER: Wieland; Susan

ATTY-AGENT-FIRM: Smit; Steven D. Lally; Joseph P. Henry; David G.

ABSTRACT:

The Driver's Associate assists a driver of a vehicle to more efficiently reach a desired destination, to record the route driven, and to provide driving summary reports. The present invention uses a unique method for tracking the dead-reckoned coordinate of the vehicle by using a sum-of-squares or .chi..sup.2 minimization algorithm for plotting the navigation route, tracking the vehicle through the road map database, and for normalizing the vehicle's location between the dead-reckoned coordinate and the roadway projected coordinate. The present invention also uses a Singular Value Decomposition method for optimizing the normalization process so that we can track a vehicle's location more accurately than other navigation devices.

8 Claims, 39 Drawing figures

Full	Title	Citation	Front	Review	Classification	Date	Reference	Claims	QWIC	Draw Desc	Image
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5471393.pn.	1

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Search Results - Record(s) 1 through 1 of 1 returned.☐ 1. Document ID: US 5307278 A

L13: Entry 1 of 1

File: USPT

Apr 26, 1994

US-PAT-NO: 5307278

DOCUMENT-IDENTIFIER: US 5307278 A

TITLE: Method of determining the position of a vehicle, arrangement for determining the position of a vehicle, as well as a vehicle provided with such an arrangement

DATE-ISSUED: April 26, 1994

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Hermans; Hans G. M.	Eindhoven	N/A	N/A	NLX
Van Der Gugten; Willem	Amsterdam	N/A	N/A	NLX

ASSIGNEE-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY	TYPE CODE
U.S. Philips Corporation	New York	NY	N/A	N/A	02

APPL-NO: 7/ 742787

DATE FILED: August 8, 1991

FOREIGN-APPL-PRIORITY-DATA:

COUNTRY	APPL-NO	APPL-DATE
NL	9001810	August 13, 1990

INT-CL: [5] G06F 15/50, G08G 1/123

US-CL-ISSUED: 364/450; 364/443, 364/449, 340/991, 340/993

US-CL-CURRENT: 701/217; 340/991, 340/993, 701/200, 701/208

FIELD-OF-SEARCH: 364/449, 364/450, 364/443, 364/444, 340/988, 340/990, 73/178R

PRIOR-ART-DISCLOSED:

U.S. PATENT DOCUMENTS

PAT-NO	ISSUE-DATE	PATENTEE-NAME	US-CL
<u>4727492</u>	February 1988	Reeve et al.	364/424
<u>4791574</u>	December 1988	Thoone et al.	364/450
<u>4796191</u>	January 1989	Honey et al.	364/450
<u>4847773</u>	July 1989	van Helsdingen et al.	364/443
<u>4962458</u>	October 1990	Verstraete	364/443
<u>4970652</u>	November 1990	Nagashima	364/449
<u>5046011</u>	September 1991	Kakihara et al.	364/450
<u>5058023</u>	October 1991	Kozikaro	364/450
<u>5115398</u>	May 1992	De Jong	364/443
<u>5119301</u>	July 1992	Shimizu et al.	364/449
<u>5170353</u>	December 1992	Verstraete	364/444

OTHER PUBLICATIONS

Harris et al, "Digital Map Dependent Functions Automatic Vehicle Location Systems",

Department of Surveying Engineering, The University of Calgary, Calgary Canada T2N 1N4,
pp. 79-87, Nov. 1988.
Thoone, "Carin, a car information and navigation system", Philips Technical Review, vol.
43, No. 11/12, Dec. 1987, pp. 317-329.
Course on Radiopositioning, Depart of Geodesy, Jan. 14-17, 1985, Entire Course Book.

ART-UNIT: 234

PRIMARY-EXAMINER: Black; Thomas G.

ASSISTANT-EXAMINER: Nguyen; Tan Q.

ATTY-AGENT-FIRM: Kraus; Robert J.

ABSTRACT:

For the determination of the position of a vehicle, navigation parameters are measured, with which periodically dead reckoning coordinates are calculated, which are compared to topographical and traffic technical information stored in a global data base. A local navigation data base is being kept and updated, containing relevant sub-information from the global data base. Using the dead reckoning coordinates test steps are performed on route segments from the local navigation data base, on the basis of which route segments forming possibly driven routes, are stored in a data structure and pseudo-segments are derived from consecutively calculated dead reckoning coordinates which form a pseudo-route and are stored in a further data structure. By comparing the route segments in the data structure and the pseudo-segments in the further data structure a well-founded correction vector for the dead reckoning coordinates is periodically determined.

16 Claims, 16 Drawing figures

Full	Title	Citation	Front	Review	Classification	Date	Reference	Claims	KWIC	Draw Desc	Image
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L4: Entry 1 of 7

File: USPT

Jul 24, 2001

US-PAT-NO: 6266607

DOCUMENT-IDENTIFIER: US 6266607 B1

TITLE: Process for selecting the traffic information transmitted by a traffic information center which concerns a route of a vehicle equipped with a terminal in a road network

DATE-ISSUED: July 24, 2001

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Meis; Josef	Munster	N/A	N/A	DEX
Parra; Andreas	Hamburg	N/A	N/A	DEX
Stangier; Peter	Wesseling	N/A	N/A	DEX

US-CL-CURRENT: 701/117; 340/995, 701/209

Full	Title	Citation	Front	Review	Classification	Date	Reference	Claims	KWIC	Draw Desc	Image
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☐ 2. Document ID: US 6256581 B1

L4: Entry 2 of 7

File: USPT

Jul 3, 2001

US-PAT-NO: 6256581

DOCUMENT-IDENTIFIER: US 6256581 B1

TITLE: Navigation method, device, system and computer readable medium

DATE-ISSUED: July 3, 2001

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Fujii; Kensaku	Yokohama	N/A	N/A	JPX
Sugiyama; Kazuhiro	Chiba	N/A	N/A	JPX

US-CL-CURRENT: 701/202; 701/200, 701/201

Full	Title	Citation	Front	Review	Classification	Date	Reference	Claims	KWIC	Draw Desc	Image
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☐ 3. Document ID: US 6249742 B1

L4: Entry 3 of 7

File: USPT

Jun 19, 2001

US-PAT-NO: 6249742
DOCUMENT-IDENTIFIER: US 6249742 B1

TITLE: Method and system for providing a preview of a route calculated with a navigation system

DATE-ISSUED: June 19, 2001

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Friederich; Matthew	Berwyn	IL	N/A	N/A
McDonough; William	Glen Ellyn	IL	N/A	N/A
Ashby; Richard	Blue River	WI	N/A	N/A

US-CL-CURRENT: 701/202; 340/995, 701/208, 701/25

Full	Title	Citation	Front	Review	Classification	Date	Reference	Claims	KWC	Draw Desc	Image
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☐ 4. Document ID: US 6208934 B1

L4: Entry 4 of 7

File: USPT

Mar 27, 2001

US-PAT-NO: 6208934
DOCUMENT-IDENTIFIER: US 6208934 B1

TITLE: Method and system for providing walking instructions with route guidance in a navigation program

DATE-ISSUED: March 27, 2001

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Bechtolsheim; Stephan V.	Buffalo Grove	IL	N/A	N/A
Jaugilas; John M.	Lombard	IL	N/A	N/A
Casino; Roy	Palos Hills	IL	N/A	N/A
Friederich; Matthew	Bervyn	IL	N/A	N/A
Doddapaneni; Srinivasa	Chicago	IL	N/A	N/A
Kalisetty; Shiva	Lisle	IL	N/A	N/A
Weiland; Richard J.	Evanston	IL	N/A	N/A

US-CL-CURRENT: 701/209; 340/988, 701/200, 701/206, 701/207, 701/208, 701/23

Full	Title	Citation	Front	Review	Classification	Date	Reference	Claims	KWC	Draw Desc	Image
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☐ 5. Document ID: US 6173277 B1

L4: Entry 5 of 7

File: USPT

Jan 9, 2001

US-PAT-NO: 6173277

DOCUMENT-IDENTIFIER: US 6173277 B1

TITLE: Interface layer for navigation system

DATE-ISSUED: January 9, 2001

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Ashby; Richard A.	Hebron	IL	N/A	N/A
Bouzide; Paul M.	Chicago	IL	N/A	N/A
Israni; Vijaya S.	Hoffman Estates	IL	N/A	N/A
Lampert; David S.	Highland Park	IL	N/A	N/A
Natesan; Senthil K.	Carol Stream	IL	N/A	N/A
Killey; Grant S.	Westmont	IL	N/A	N/A
Jasper; John C.	Arlington Heights	IL	N/A	N/A
Fernekes; Robert P.	Wooddale	IL	N/A	N/A
Feigen; Jerry S.	Chicago	IL	N/A	N/A

US-CL-CURRENT: 707/1; 340/995, 345/440, 701/208, 701/209

Full	Title	Citation	Front	Review	Classification	Date	Reference	Claims	KWIC	Draw Desc	Image
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☐ 6. Document ID: US 6122593 A

L4: Entry 6 of 7

File: USPT

Sep 19, 2000

US-PAT-NO: 6122593

DOCUMENT-IDENTIFIER: US 6122593 A

TITLE: Method and system for providing a preview of a route calculated with a navigation system

DATE-ISSUED: September 19, 2000

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Friederich; Matthew	Berwyn	IL	N/A	N/A
McDonough; William	Glen Ellyn	IL	N/A	N/A
Ashby; Richard	Blue River	WI	N/A	N/A

US-CL-CURRENT: 701/202; 701/200, 701/208, 701/209, 701/23, 701/25, 707/1, 707/100,
707/104.1

Full	Title	Citation	Front	Review	Classification	Date	Reference	Claims	KWIC	Draw Desc	Image
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☐ 7. Document ID: US 6073076 A

L4: Entry 7 of 7

File: USPT

Jun 6, 2000

US-PAT-NO: 6073076
DOCUMENT-IDENTIFIER: US 6073076 A

TITLE: Memory management for navigation system

DATE-ISSUED: June 6, 2000

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Crowley; Paul	Buffalo Grove	IL	N/A	N/A
Jaugilas; John	Lombaro	IL	N/A	N/A
Nash; Alex	Gurnee	IL	N/A	N/A
Natesan; Senthil	Carol Stream	IL	N/A	N/A
Lampert; David S.	Highland Park	IL	N/A	N/A

US-CL-CURRENT: 701/208; 707/102

Full	Title	Citation	Front	Review	Classification	Date	Reference	Claims	KWIC	Draw Desc	Image
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